SWBAT: calculate electrical power

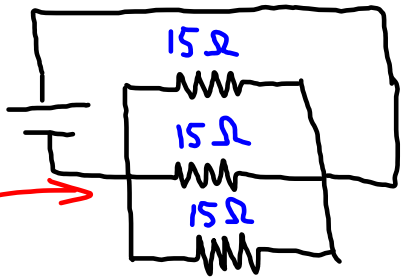
Jan 4-7:20 AM

SECA Physics
Friday 11 March 2016

Welcome!!!

H. Leslie Grebe

* Pick up:
- slip of paper (for later)
- yellow concept sheet



MORE THAN ONE PATH

Opening Questions:

Is this a series or parallel circuit? How much total resistance would you guess there is?

$$R_T = \frac{15\,\Omega}{3} = 5\,\Omega$$

Reminder

Centering

Sep 7-7:04 AM

Mystery Resistor - extra credit

- You may work alone or with at most one other person of your choosing.
- Get a "Mystery Resistor" labeled with a letter from Leslie
- Use the same equipment that our teams used in class. Take measurements that will allow you to calculate the resistance (in Ohms) of your resistor.
- You may work when there is spare time in class or arrange other time with Leslie.

Due by 3:00 Friday 3/18

Jan 19-7:12 AM

Concept Sheet -- get yours out

5 OR 6 ROWS

We'll fill in a concept & "bike analogy" column today

Concept	Meaning	Sym-bol	Units	Bike Analogy
CHARGE	PROPERTY OF PROTONS & ELECTRONS THAT CAUSES ATTRACTION & REPULSION	q	COULOMB C	
VOLTAGE = ELECTRIC POTENTIAL	POTENTIAL BASED ON POSITION IN AN ELECTRIC FIELD. "PUSH"	V	VOLTS V $V=\frac{I}{C}$	-PERSON -PEDALING ⇒THE PUSH
CURRENT	THE FLOW OF ELECTRIC CHARGE. = CHARGE / TIME	I	AMPERES $A=\frac{C}{S}$	CHAINS, WHEEL, BIKE MOVING
RESISTANCE	OPPOSITION OF CURRENT (AGAINST THE FLOW)	R	OHMS Ω	BRAKES
OHM'S LAW	VOLTAGE = CURRENT X RESISTANCE	V= I·R	1V = 1A · 1Ω	
POWER	AMOUNT OF WORK DONE PER SECOND POWER = CURRENT X VOLTAGE	P =I·V	WATTS W	

WATER ANALOGY

WATER ITSELF

-PUMP -PRESSURE ⇒ PUSH!

FLOW OF WATER

$\frac{q}{I \cdot t}$

$\frac{V}{I \cdot R}$

$\frac{P}{I \cdot V}$

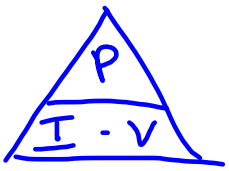
1W = 1V · 1A = $\frac{J}{S}$

Extend Page

Feb 23-7:34 AM

Power in Circuits:

POWER = CURRENT × VOLTAGE



cpcd34-2

a) How much power is needed to produce 3A using 12V?

$P = I \cdot V = 3A \cdot 12V = 36W$

b) How much current will result from 10 V and 60 W of power?

$I = \frac{P}{V} = \frac{60W}{10V} = 6A$

c) How many volts produce 10 A of current to make 5 W of power?

$V = \frac{P}{I} = \frac{5W}{10A} = 0.5V$

Mar 21-7:21 AM

Daily 3 Questions

* Every day except test/project days
* 3 Questions on the topics of the day
* Main source of daily points
* I am happy to give credit when I have no concerns about someone giving or getting help with the answers.

You can't get your points if you don't have your NAME!!!

Name	Period
1.	
2.	
3.	

Sep 9-7:32 AM

1) What does "I" stand for in a formula?

CURRENT

2) What is the **power** when a voltage of 120 V drives a 2A current through a device?

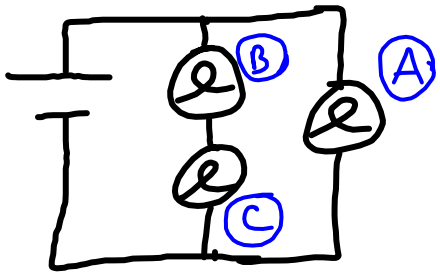
240W

3) How much current will result from 10 V and 60 W of power?

$I = \frac{P}{V} = \frac{60W}{10V} = 6A$

Feb 18-6:59 AM

1) Which bulb will be brightest?
   A.
   B.
   C.
   All the same.



2) What is the **power** when a voltage of 120 V drives a 2A current through a device?

3) How much current will result from 10 V and 60 W of power?

Feb 18-6:59 AM